THE MARTIN STAR

March 1944

Domes of Destruction

K. F. WASMUTH, Quality Manager

Quality-Always In All Ways

UNCLE Sam not only wants war planes in ever-increasing numbers, but he also wants planes that can be depended on to do the job for which they were designed. He wants planes that will go out into the storm of anti-aircraft fire always present over enemy targets and return with their crews. He wants planes that can slug it out with the best fighters the enemy has to offer.

The ability of a plane to meet those requirements is based on quality.

At Martin-Nebraska we have two groups of experts whose job it is to see that each plane is as nearly perfect as possible. These are the "Quality Engineering" and Inspection Departments. Heading up these groups at the Midwestern plant is K. F. Wasmuth, Quality Manager.

Wasmuth was born in Bayfield, Wisconsin, in 1914. His father, a construction engineer, headed West shortly after "Wasie's" birth. During the next few years, young Wasmuth obtained his grade school education in whatever towns his father used as headquarters during construction jobs, winding up in Spokane, Washington. In 1937, he received a degree in Aeronautical Engineering from the University of Washington at Seattle.

In 1936, the Government was building a huge dam across the Columbia River just above Portland, Oregon. Wasmuth quit school for a year to work on the mammoth project—the Grand Coulee Dam—as an engineer with the Department of Reclamation. He returned to the University and finished his work there the following year. After graduating, he again joined the Department of Reclamation at Grand Coulee.

It took him just four months to decide that he was wasting his time on a construction job. "I had studied aircraft and had received a degree in Aeronautical Engineering, so I decided to put that knowledge to work," Wasmuth remarked recently.

Consequently, late in 1937, Wasmuth obtained a job with The Glenn L. Martin Company in Baltimore. His first job was in the Laboratory under Reid B. Gray, and his assignment found him working on acceptance tests for the huge Russian Clipper what was then the world's largest flying boat. Later, he was placed in charge of all Engineering tests conducted by the laboratory.

In 1939, Wasmuth left the Martin Company to join Curtiss-Wright as a test engineer. His stay there was brief, however, and a few months later he returned to the Martin Company.

After rejoining Martin-Baltimore, he went to work in the test division of the Engineering Structures Group. This particular group performed all of the structural tests for the planes, designed fixtures and interpreted structural tests in line with stress analysis requirements.

In June of 1942, Wasmuth was transferred to the Inspection Department as Inspection Engineer. His immediate boss was John P. Bailey, today Factory Manager at Martin-Nebraska. G. T. Willey was Inspection Manager. It was in March, 1943, that Wasmuth moved to Omaha where he was assigned the job of Chief Quality Engineer, a new office at Martin-Nebraska. On Christmas day, 1943, he assumed the duties of Quality Manager, heading up the department which he helped organize. His job includes the direction of all Company inspection, a vital part in the building of bombers.

At Martin-Nebraska, Inspection and Quality Engineering extend far beyond the confines of the plant itself. Some of the men working under his direction are assigned to the factories turning out the parts that go into Martin Marauders. These men see to it that the sub-contracted parts meet the high standards of quality demanded by the Martin-Nebraska Company. Others in the department work closely with the Air Corps inspectors in an effort to insure perfection in the finished product.

Continued reports from the war fronts telling of the unusually low ratio of losses among Marauder squadrons speaks well of the job being done by Martineers in general and by our Inspection Department. Unless the planes are put together properly, they won't survive the beating they must take in combat. Our product does take a beating. But, day after day, mission after mission, Omaha-built Marauders are bringing 'em back to fight again—proving beyond mere words that the old saying "Quality pays in the long-run" is a sound and logical policy.

A few years ago, there was a moving picture which bore the title, "He Married His Secretary." The picture wasn't about Wasmuth, but it might have been. While working in the Laboratory at the Martin Company in Baltimore, he met Eugenia Hilton. She became his secretary, and in 1940 they were married. The Wasmuths have one son, Ward, born in October, 1941.

MARTIN U.S.A.

THE MARTIN STAR

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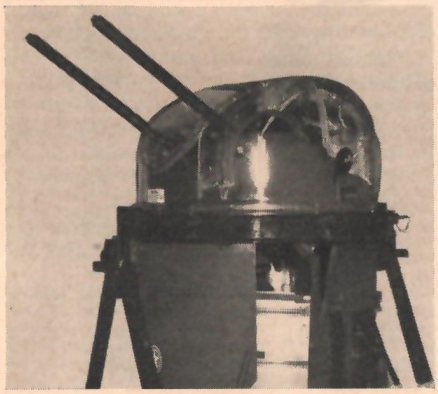
SALUTE TO SINCLAIR!

LIKE a skillful boxer packing a knockout wallop in either fist the Glenn L. Martin Company is taking the fight to the enemy night and day, without surcease.

Carrying the analogy further, we may compare the B-26 Martin Marauders to the short, jolting left jabs that our boxer throws to the body, while Martin power-operated turrets are comparable to the long looping right hooks thrown to the jaw.

While the Marauders blast the Axis planes caught on the airports of occupied France, the power-operated turrets, built by our Sinclair Division and mounted on the heavy, long range bombers of the American and British air forces, are knocking the Luftwaffe fighters out of the German sky like clay-pigeons.



When the history of the United Nations air offensive is finally written and the score of enemy planes destroyed is tallied, it will be found that the Martin planes—Marauders, A-30 Baltimores and PBM-Mariners, together with Martin designed and Martin built power-turrets, weighed the scales of victory heavily in our favor.

Until quite recently, the Sinclair Division of the Glenn L. Martin Baltimore Plant was a little-known unit, housing a precious and carefully guarded secret.

Marauders, Baltimores and Mariners made the news—but to a great extent Sinclair built turrets made the Baltimores, Mariners and Marauders. For it was these power operated turrets that for the first time enabled the bombardment arm of our Air Forces to meet the crack fighters and interceptors of the enemy on an equal footing.

There is no longer any purpose in veiling those activities of the Sinclair Division with secrecy. Turrets built by this division have already blazoned their story in letters of fire in the sky, where all who can see may read.

Let us pause to call a partial roll of the battle planes of the United Nations that mount these turrets—in the R.A.F. Martin turrets ride with the mighty Lancasters in the night saturation raids over the German homeland.

In the U.S. Air Forces, Martin power-turrets are the rule rather than the exception. In the Pacific zone, the medium and heavy bombers of the Eleventh, Seventh and Fifth Air Forces, and the Navy search patrol bombers of Fleet Air Wing Two, mount the Baltimore built turrets.

In India and China the Tenth and Fourteenth Air Forces are hewing out a new "Burma trail of the sky" behind the staccato blasts of the Martin mounted .50's.

Where the blue waters of "Mare Nostrum," the Mediterranean lave the shores of Africa, Italy and Southern France, American and English gunners, crouched in the comparative safety of Martin built power-turrets, are hammering out a tatto of victory against the best that the enemy can throw against them.

Guns spitting death from Martin built Electric and Hydraulic turrets help sweep Algiers and Sicily clear of enemy troops, helped hold the beachheads in Italy against all counter attacks, and today are writing the bloody runes of victory on the stoutly held road to Rome.

These power turrets, mounted on the land based bombers and the flying boats of the Third and Sixth Air Forces that range the South Atlantic, and the Fourth Air Force, responsible for the protection of the West Coast, today are giving us that vital margin of vantage required to keep the sealanes free from the roving wolf-packs of Axis submarines.

There are the B-24 Liberators—the great four-engined "heavies" that carried out the spectacular raid on the Roumanian oil wells, and that are rated by Peter Masefield, British Aviation Writer, as the No. 1 slugger of the U.S. Air Force.

The B-17 Flying Fortresses mount the Martin power-turrets as do the A-20 Havoc or Boston Attack Bombers, the PV-1 and PV-2 Vega Venturas, and the fast search planes and bombers of the Navy's Air Arm.

Due to the long range operations of the Air Forces in all theaters, it may safely be assumed that the majority of enemy planes downed have been felled by fire from the defensive batteries of our bombers—and this is the equivalent of saying that gunners shooting from Martin power-turrets have scored the greatest aerial bags of World War II.

A salute then to the men and women of the Sinclair Division—In the battle of production their efforts may be counted second to none. There is more than mere conincidence to be found in the fact that the effectiveness of our heavy, long-range bombers operating over Fortress Europe has increased as the production of the turrets has been stepped up by the Martin Soldiers of Production at the Sinclair Division.

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Martin Turrets on all War Fronts

In aerial combat all over the world you'll find Martin turrets aiding and protecting our fighters in their battle to smash the Axis.

POWER-operated turrets are one of the outstanding developments of this war. These instruments of destruction to enemy aircraft and means of protection to our own bombers, which have carried a major share of combat in every aerial fight in this war, were first developed by the Glenn L. Martin Company, currently the largest single manufacturer of turrets.

By the thousands around the world, Martin electric and hydraulic turrets are fighting in a dozen separate types of United States and British bombers, representing nearly a half of American-manufactured heavy, medium, attack and patrol bombardment.

From the top to the bottom of the Pacific Ocean with bombers of the Eleventh, Seventh and Fifth Air Forces and with Navy search bombers of Fleet Air Wing Two; with the Fourteenth and Tenth Air Forces in China and India; with the Fifteenth, Twelfth and Ninth Air Forces in the Mediterranean and with the Eighth in England, Martin turrets are working daily, their guns spitting deadly lead at enemy fighters and bombers. From the Third and Sixth Air Forces bombers range into the South Atlantic and from the Fourth along West Coast sea lanes to help clear convoy routes of Axis U-boats.

For Army and Navy Planes

The Martin electric turret is on the decks of B-24 Liberator heavy bombers; B-26 Marauder mediums; A-30 Baltimore and A-20 Havoc or Boston attack bombers; a series of B-17 Flying Fortresses: PV-1 and PV-2 Vega Venturas, the Navy's fast search planes and bombers, and the PB4Y-2, Navy Liberators. The Martin hydraulic turrets are on the bow, deck and tail of PBM-1 and PBM-3 Mariners, and are on the bow and deck of PB2Y-3 and PB2Y-4 Coronados, four-engine patrol bombers for the Navy.

The Army Air Forces report, covering combat activities from the war's start until last October 31, it stated that our aircraft had downed 8,478 enemy planes; probably destroyed 2,555 more, and damaged 2,834 others.

Military security does not permit the disclosure of exact figures on the numbers of enemy aircraft downed by bombers (i.e. Turrets). Considering the size and scope of long-range operations over Germany, into the oceans and other theaters, a reader can draw his own conclusions about how many enemy airplanes were destroyed or damaged from Martin turrets.

At Pearl Harbor

In 1942, these turrets on American bombers, at first depleted by the Jap sneak attacks at Pearl Harbor and the Philippines, and then growing swiftly, helped the rapid comeback. They were on Marauders defending Australia and contributed immeasurably to the B-26's record of 96 Zeros to only 6 Marauders lost. They helped Marauder torpedo bombers at Midway and in the Aleutians. A year later on Liberators they assured victory in the Northern Pacific and helped to clear the lifeline to China via New Guinea. They were at the battles of the Coral and Bismarck Seas. They were on hand during the Solomons, at Guadalcanal and in the Papuan offensive.

> Another Marauder was coming home from an Italian mission. Suddenly Sgt. Dick Morris, turret gunner, heard several short rapid bursts of machine gun fire. Off on the horizon, far out of range, he spotted a formation of enemy planes.
>
> "What are you doing, Joe?" Morris yelled to the tail gunner, Sgt. Joe Santonetti.
>
> "Warming up my guns," Joe replied.
>
> "For —— sake, cut it out. You'll scare 'em off," hollered Morris.

In China Major Gen. Claire L. Chennault's Fourteenth A. F. "Flying Tigers" had brought down 351 Jap planes to a loss of only 68. Many Jap casualties resulted from Martin turrets on Liberators.

Martin turrets were pouring out lead daily from El Alamein in the autumn of 1942 until Field Marshal Rommel's forces were captured or evicted from North Africa in May, 1943. They raked enemy tanks and troops and planes through the stands at the Mareth Line, El Hamma, at the Kasserine Pass and finally in upper Tunisia. Our bombs and turrets helped destroy 5,511 enemy aircraft in this theater alone, adding 750 probables and 1,903 damaged both on the ground and in aerial combat.

For many months since Allied bombers have begun making out of what Germans call "Festung Europa" their own version of "Festering Europe," our heavy bombers penetrated deep into Germany's industrial heart without fighter escort. It was then on Liberators that Martin turrets received their severest test, and they stood up. They were on Liberators in their brilliant raid on Rumanian oil fields at Ploesti. They helped protect Marauders in their offensive of 6,700 sorties over France, Holland and Belgium when only three-tenths of one per cent of Marauders were lost in combat.

On Patrol Duty

Ranging over vast expanses of Pacific and Atlantic waters, the Navy's Mariners, Coronados, Venturas and PB4Y's are carrying Martin turrets as protective armament. These patrol bombers of varying sizes are also known as search planes, for it is their job to keep clear the sea lanes, hunt down enemy subs and fight off enemy aerial threats.

The Venturas, for example, can outrun any Jap plane under favorable conditions. Although its primary job is speedy reconnaissance, it carries bombs and, if necessary, jettisons them to become a fighter against enemy planes. It is competent against the Zero—and, as such, makes full use of its Martin deck turret.

The Coronado found use for its turrets against Jap shipping in the Gilbert Islands. The Mariner is now patrolling the additional 360,000 square miles of water frontage picked up after the victory of the Marshalls. Bombs for the offensive

★ ★ ★

MARTIN B-26 MARAUDER—Typical of the many war planes carrying Martin deck turrets. Combat records of these planes are "tops" on the aerial battlefronts.

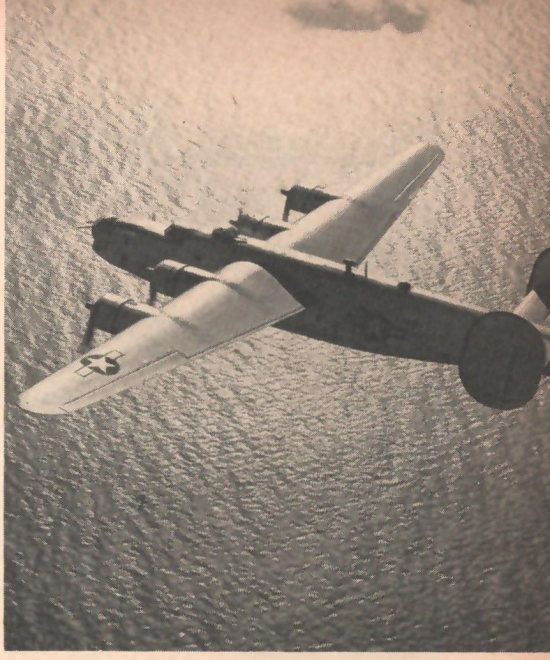
FLYING FORTRESS — This heavy bomber has fought on every front. It carrys Martin deck turrets.

and turrets for the offensive and defensive are the rule with these planes.

The Glenn L. Martin Company is one of the few builders of airframes that also builds turrets for its own and other plane types. It was the first to build the power operated turret, going back to 1937 when an electro-hydraulic turret was put in the PBM-1 Mariners. Some of those turrets are still in service.

Behind the first turret lies several decades of foresight and planning. A starting point might be considered back 31 years ago when Martin designed the "Aeroplane Destroyer," a plane with a Winchester mounted in its nose. From it arose the principle of defensive armament for the plane.

Americans led the world in the twenties and thirties in turret investigation and experimentation. By 1932 the XB907, forerunner of the B-10, had an open forward cockpit and a rotating enclosure resembling a cut lemon. This was truly the start of turrets as we know them today. During the next four years a manually operated gun enclosure was evolved and used on the B-10.



PB4Y Liberators are equipped with Martin deck turrets.

This Coronado bomber carries Martin bow and deck turrets.

This Ventura bomber, with a Martin deck turret, sank a sub last April.

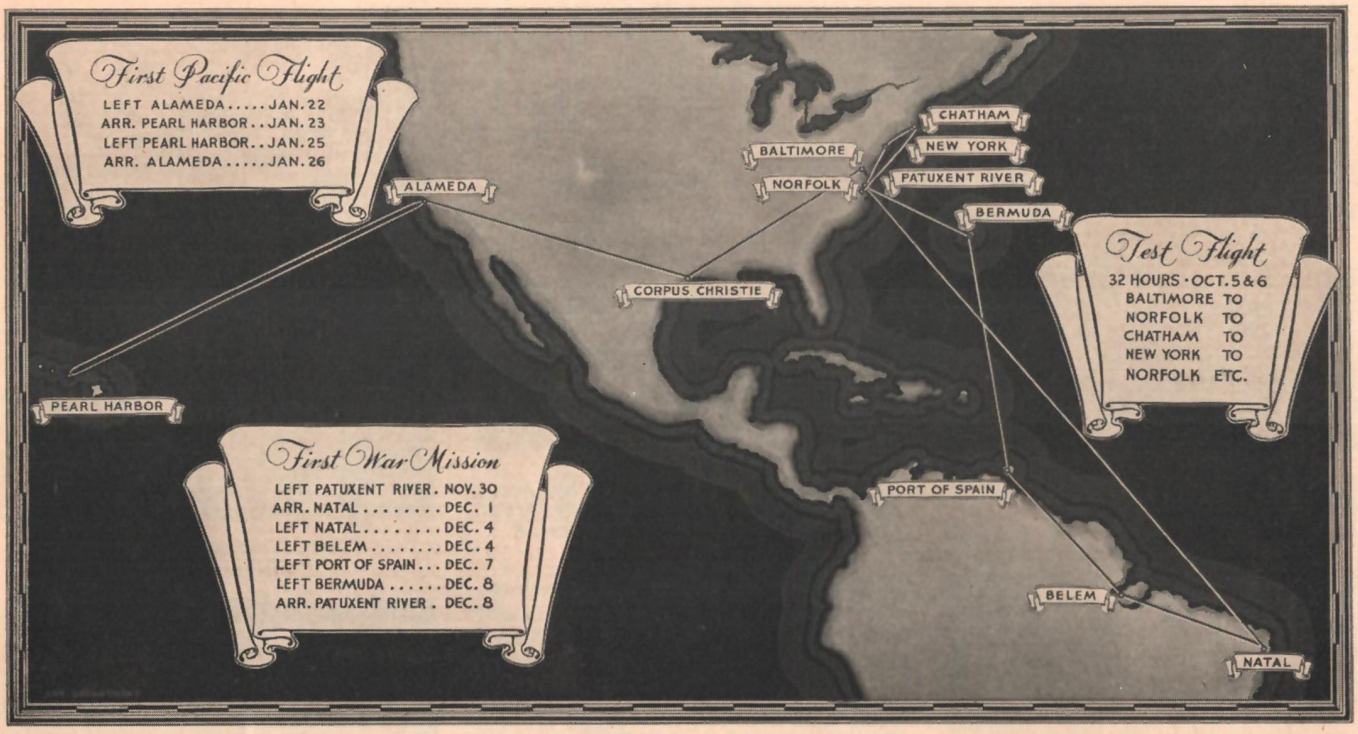
Mariners in Pacific

GULL-WINGED PBM-3 Mariners have joined the Navy's "search plane" fleet in the Pacific and at this very moment are patrolling the 360,000 square miles of ocean annexed with our recent capture of the Marshall Islands. Thus another chapter is added to the saga of this two-engined flying boat that has been handed as many different kinds of jobs as any modern warplane and has turned each one into a notable achievement.

Actually the Mariner's new assignment is the job for which this 25-ton patrol bomber was originally designed but never quite got around to because of other pressing business. First, there was a little problem of U-boats in the Atlantic. The Mariner took this in its stride, and today the PBM-3 is known from Key West to Rio as the nemesis of Nazi submarines. Then there was the matter of supplies for the Southwest Pacific and other PBM-3's quickly converted to cargo carriers joined up with the men of VR-10 to do a job that couldn't be done, but was. And, finally, there were such things as high seas rescues, the training of paratroops and airborne infantry and scores of the little drudgery assignments that make war live up to Sherman's definition. Here once again the Mariner demonstrated the spirit of the men who built her, giving her all without complaint.

And now at last the reward she strove so long for has been granted—she's a full-fledged search plane, patrolling vast expanses of ocean for that most glamorous of all Navy squadrons—Fleet Air Wing Two. In Army parlance Fleet Air Wing Two would be a bombardment group, but dropping bombs on specified objectives is only one of its activities. A far more important one is looking for trouble and than taking care of it no matter where it's found. It means long patrol flights—they may last from 12 to 15 hours; unexpected bombing runs when a Jap vessel is sighted; and fighter plane dog fights with enemy aircraft designed for that one activity.

It's an exciting life and a dangerous one for this gull-winged warbird.



More than 16,000 miles was covered by the Mars in her first three history-making trips charted on the map above

Shadow of the Future

COMING events cast their shadows before them, and today one of the biggest of those shadows as far as aviation is concerned is being cast on the waters of the Pacific. It's the shadow of the Navy XPB2M-1—better known as the Martin Mars; and the event it portends is the air age of the future when the whole world will be within visiting range of the average man.

That this age is already upon us, awaiting only the lifting of war clouds to endow each one of us with a freedom of movement never before dreamed possible, has been demonstrated beyond doubt by the Mars' performance since the giant flying boat first joined the Naval Air Transport Service last November.

Has Flown 16,000 Miles

In barely 100 hours of flying time "The Old Lady," as she is known to her crew, has covered over 16,000 miles—two-thirds of the distance around the Equator—has put in at such picturesque and widely separated ports as Natal and Belem, Brazil, Port of Spain, Trinidad, Corpus Christi, Texas, Bermuda, Alameda, Calif., Pearl Harbor, Hawaii, and of course, Baltimore, Md., original port of the early clippers. During 83 of these hours devoted to service flying she has accounted for 132,905 ton miles of cargo transport, 61,200 man miles of passenger transport.

The Mars is more than just the world's biggest airplane—she is the vindication of a dream, a dream on the successful outcome of which depended the peacetime future of thousands of men and women now building the warplanes with which to win that peace. Her initial 8,972 mile war mission meant far more than the smashing of records for cargo carrying and over-water flight—it meant that the giant flying boats of which men had talked were now a proven actuality. It meant that more of these 70-ton aerial freighters would now be built to speed the prosecution of the war. And it meant that these same winged giants would be ready and waiting to revolutionize transportation when the guns stopped firing.

TWO CHAMPIONS — Commander Gene Tunney looks out through the hatch of the Martin Mars just before taking off from Hawaii in the Navy's biggest flying transport.

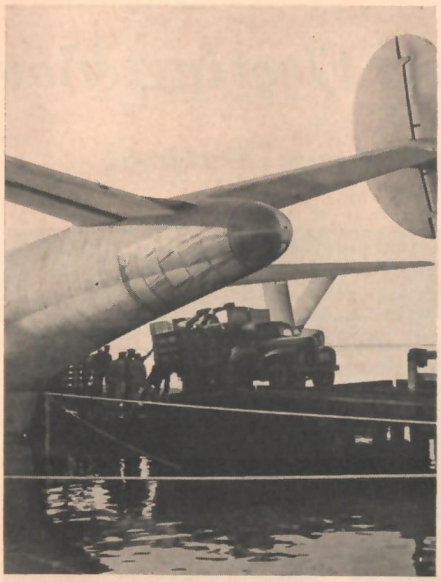
Much of the story of the Mars has been told many times. How the big ship was first designed as a patrol bomber and later converted to a transport, and how the faith of its designers and builders was ultimately justified by performance beyond expectation is now a matter of legend. The records set by "The Old Lady" on her October endurance flight, on her first war mission to Natal and on her first Pacific mission to Hawaii have been blazoned throughout the nation's press.

Much of the story that remains untold must remain untold for the duration. This is the part that deals with efficiency, operating costs and fuel consumption. When these figures finally are revealed, they will be as sensational as the Mars' 4,375 mile non-stop flight to Natal with 13,000 pounds of mail or the 35,000-pound cargo of beryllium, mica and tantalite which she carried over the South American jungles from Belem, Brazil, to Port of Spain, Trinidad. An indication of what is to come may be found in the 26,000 pounds of mail the Mars brought back from its first trip to Hawaii—a $128,000 payload at the current rate of 20 cents a half ounce for air mail from the islands.

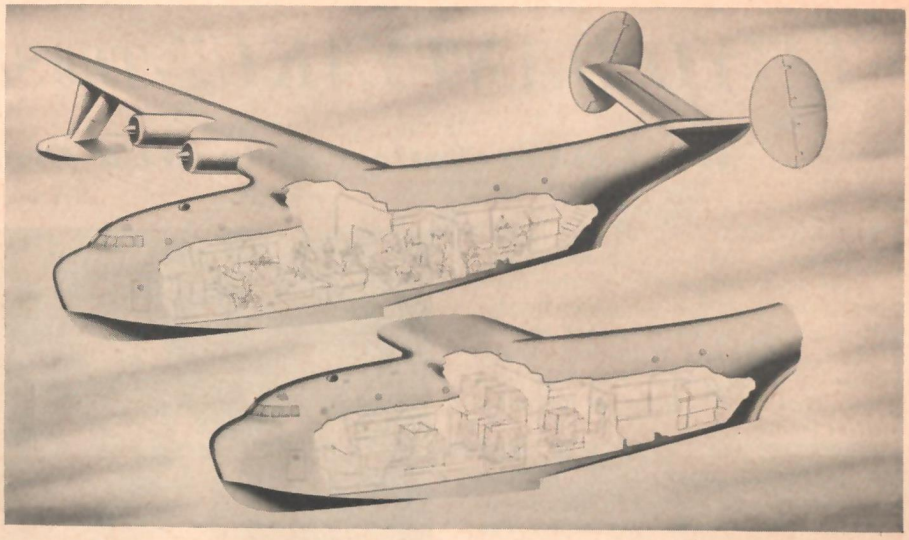
Unparalleled Comfort

But the future forecast by the Mars is not only a future of long flights, heavy cargoes and unbelievably low operating costs—it is also a future of unparalleled comfort for passengers and crew. Inside the spacious hull of the Mars with its

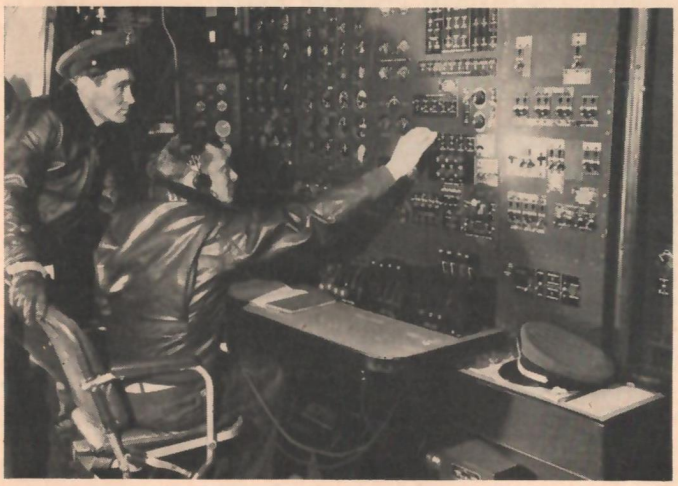
(*Continued on page* 17)



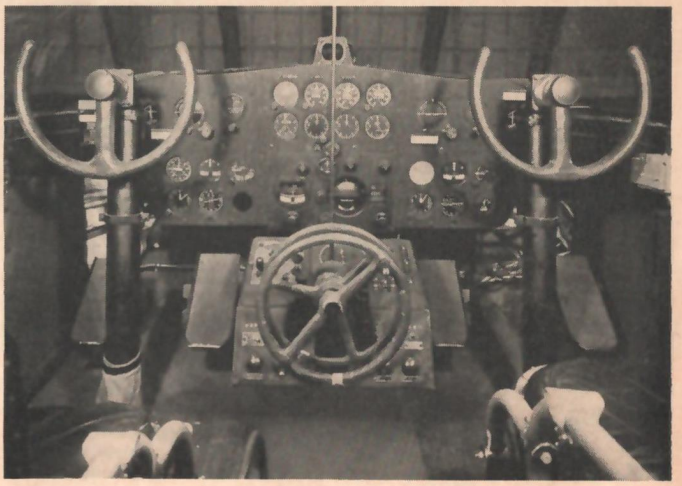
A Navy truck loaded with cargo to be stowed aboard the Mars for rapid transport to Pearl Harbor is dwarfed by the tail of the giant flying boat.



Carrying jeeps and aircraft engines is child's play for the mighty Mars, whose 117-foot 3-inch hull has the cubic capacity of a 14 to 15 room house. Passenger and cargo facilities are illustrated in this artist's conception of the big ship.



Ensign Albert H. Geck, right, and Clovis A. Norwood, at the flight engineer's panel. On the Mars, flight engineering is a two-man job.



The flight engineer's gain is the pilot's loss, or vice versa. On the Mars the pilots are actually faced with fewer instruments than on many smaller transports.

The flight deck of the Mars is in itself larger than the interior of a standard pre-war airliner. Right, Chief Specialists Jack North and Allen Larkin prepare steaks in the Mars galley. (Official U. S. Navy photographs included.)

"TAIYO DANTYAKU"-The Silver Fleet in Action

New Guinea Natives Help With Ground Crew Duties

SOMEWHERE along the coast of New Guinea a Jap pokes his head out of the dense underbrush. Farther along from a foxhole another squints up into the sun. High in the heavens they see the glint of a Marauder formation. "Taiyo Dantyaku"—the "Silver Fleet" is back again. They scream warnings and all is turmoil below.

Since mid-summer these B-26's have been roaring steadily over Jap bases in New Guinea and New Britain. Target for today: Lae, Wewak, Alexishafen, Finschafen, Madang, Beliau island, Gasmata Bay, Cape Gloucester, Sattelberg on the Huon Gulf, Silimati Point or Tauali.

These sturdy Marauders, remnants of that famed group which nosed out of Langley Field the day after Pearl Harbor are still flying, bombing and striking terror into Nipponese hearts. The Silver Fleet has participated in 41 missions since July, 1943, and has lost only one plane—in a crash landing after suffering flak wounds over Madang and returning home. Only one man has died in combat, a crew member of that B-26.

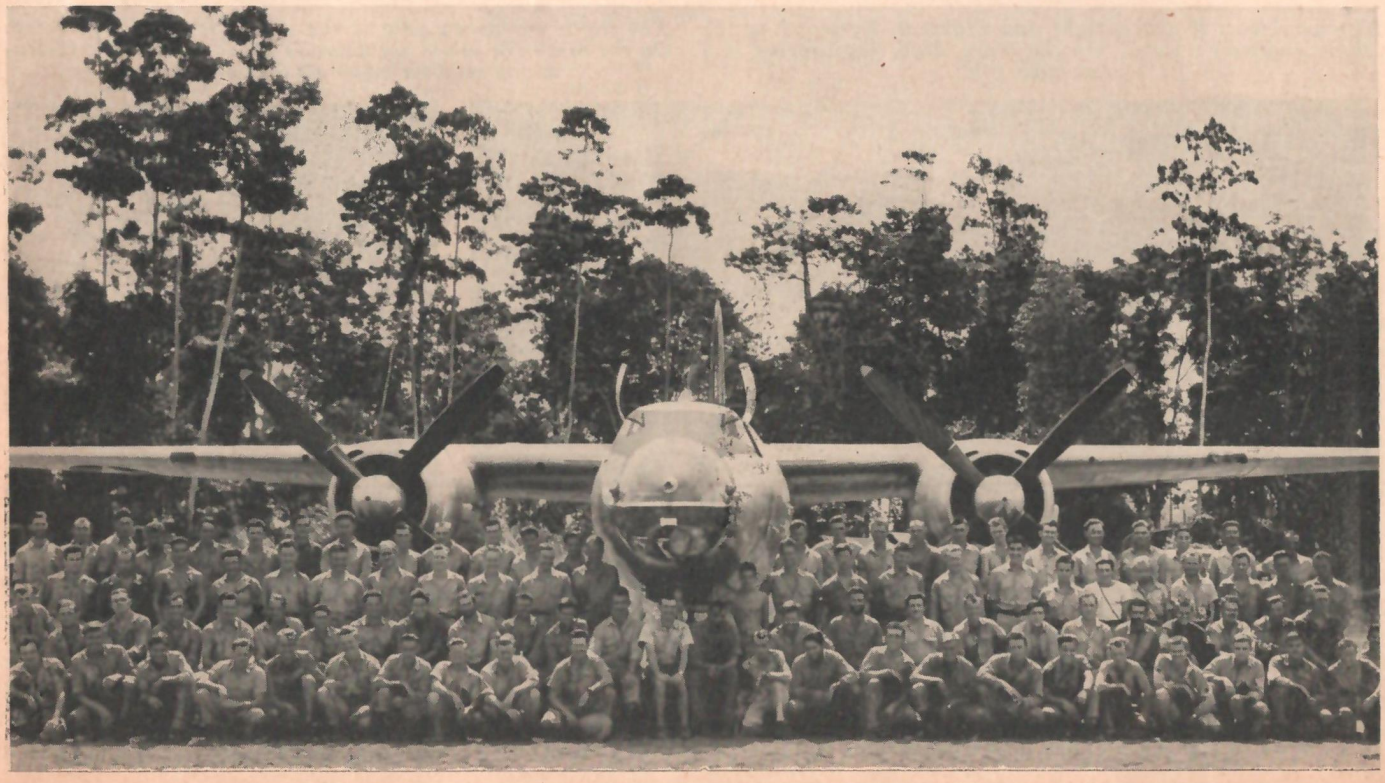
Amazing! Yes, indeed, especially when one recalls that these Marauders have been flying two years of combat. They are the short-wing jobs that saved Australia back in 1942, when Marauders rolled up a superb record of 96 Zeros downed to a minute loss of six B-26's.

They are not a group any longer as they were when such able officers flew them as Jerry Crossen, Graham Gammon, Hap Jolly, Al Moye, Dwight Divine, Johnny O'Donnell, Wal Krell, Gilly Lewis, Dill Ellis, Shanty O'Neil, George Anderson—and countless others. Those boys have

(*Continued on page* 16)

NEIGHBORS—Fierce, painted head hunters of New Guinea, many of whom have seldom seen a white man until the war, are cooperating with the B-26 "Silver Fleet." They tend to the jungle runways and keep up the camp area.

JUNGLE MARAUDERMEN—In the heart of a southeastern New Guinea jungle, Marauder ground crews line up for the camera. They are the boys who keep this great squadron of B-26's in continuous action against the Japs.



Twenty For The NAVY

THE Martin JRM-1, production version of the 70-ton Mars, twenty of which are now being built for the Naval Air Transport Service, will be even larger and more efficient than the prototype now in service in the Pacific.

External changes on the new production model will include substitution of a single rudder tail for the twin rudder tail on the prototype, lengthening of both the bow and second step by four feet to provide added cargo space, and the enlargement and redesign of both main and rear cargo hatches. Inside, the giant hull has been stripped of shower baths, pressurizing equipment, mess tables and lounges which were included when the big ship was first designed as a patrol bomber. One bulkhead has been removed completely and frames with openings wide enough to permit the passage of jeeps, field guns and aircraft engines substituted for the remaining bulkheads on the main cargo deck. The number of bunks has been reduced from thirty-six to eight, four of which are located on the flight deck in the space formerly occupied by the pilots' lounge, and four on the upper rear deck just aft of the auxiliary power plant compartments.

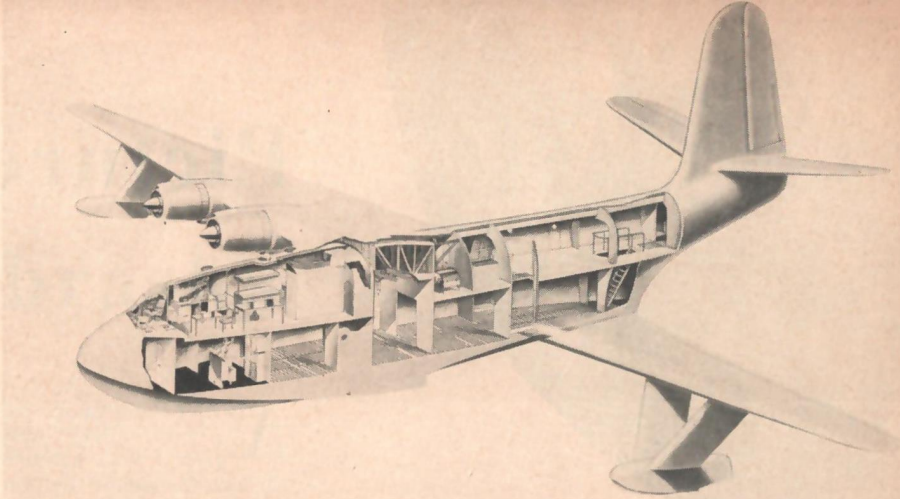
New Equipment Included

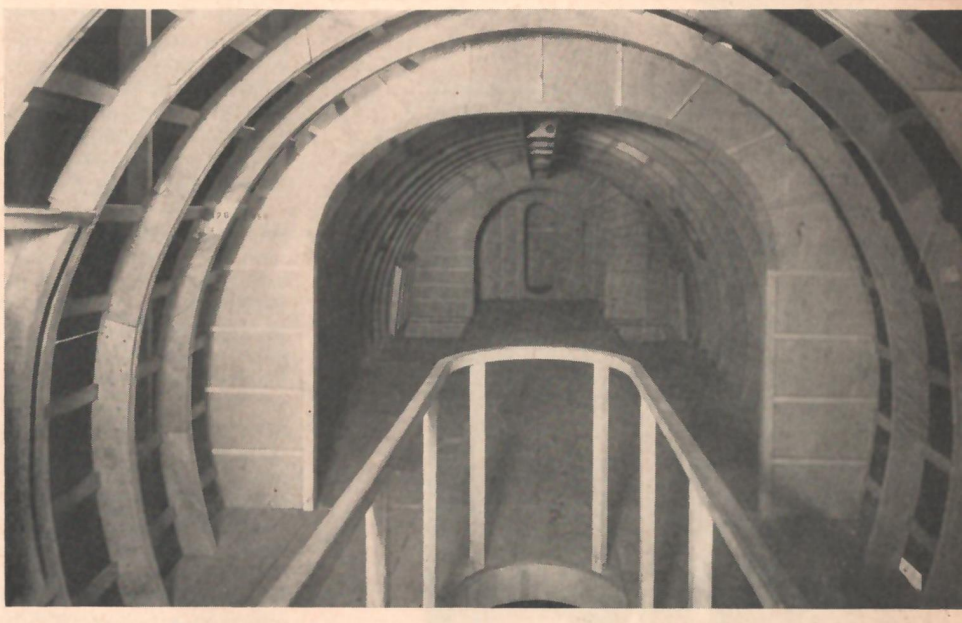
New equipment on the JRM-1 includes more than a ton and a half of tie-down fittings, skid strips and engine dolly tracks, a 5,000 pound capacity cargo hoist on an overhead track running out on both wings, and a stairway to the upper raer deck to permit its use for litter cases. While primarily designed for cargo carrying the JRM-1 has built-in fittings which will permit its instant conversion into a hospital ship, a passenger transport or a troop carrier. In the first category it will accommodate 84 litter cases with 25 attendants; in the second, 50 passengers in reclining chairs, all on the lower deck; and in the third, 132 troops, all seated. As a cargo carrier the JRM-1 will have ample space for seven jeeps and

(*Continued on page* 18)

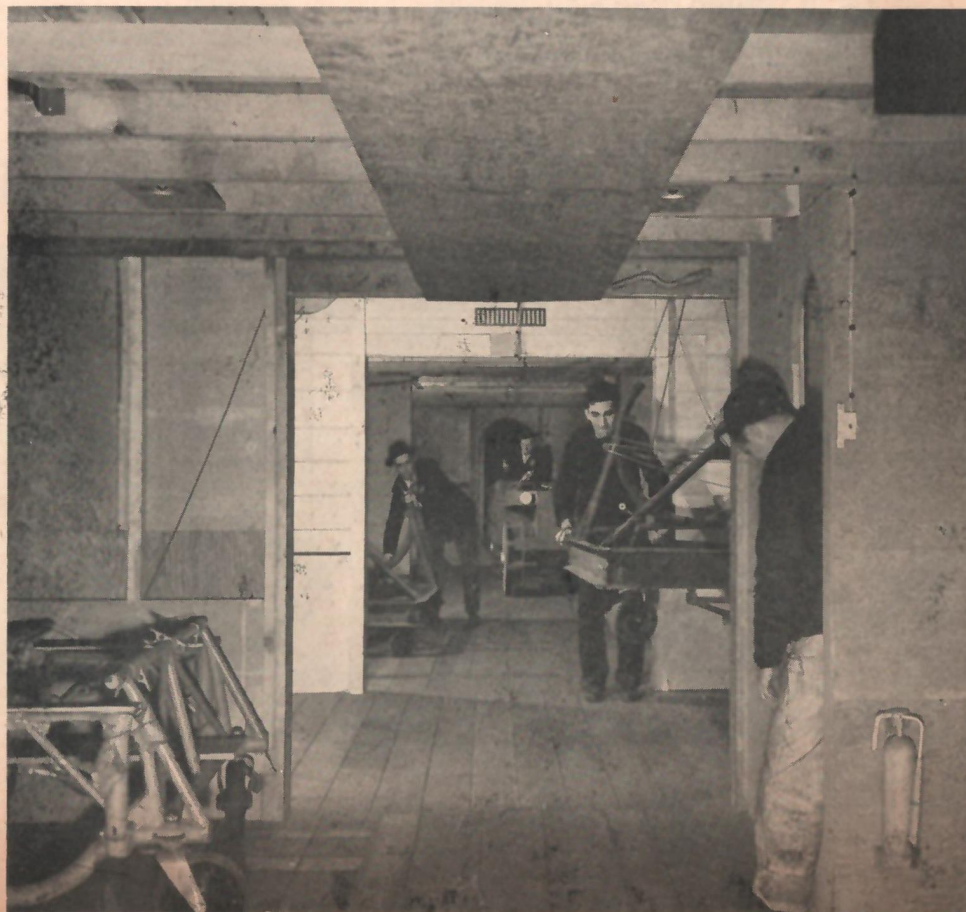
It's Official

The name "Mars," which has been in general use for sometime, was officially assigned to the JRM airplane, by action of the Joint Aircraft Committee on February 17th, according to a recent communication from Lt. George B. Gose, Recorder, Technical sub-Committee on Naming of Aircraft, U.S.N.R.





Looking more like a subterranean catacomb than the interior of an airplane, the upper rear deck of the JRM-1 can be used for passengers, litter cases or low density cargo. Below there's plenty of room for jeeps and aircraft engines in the main cargo hold of the JRM-1. Frames with wide openings have replaced the bulkheads on the prototype, and engine dolly tracks, cargo skids and tie down fittings have been incorporated.



E. L. "Ernie" Johnson, supervisor of Modification, develops the negative taken of the newly installed part on the Mock-up plane, as the first step of the Photo Drawing process.

Pictures More Valuab
Word

ALMOST every plane that arrives at the Modification Center at Martin-Nebraska is a "rush order." And of all the forces that spring into action upon a plane's arrival, none accelerates production with greater efficiency than Reproduction, through the use of the Photo Drawing process.

Photo Drawings, a recent development, is a combination photograph showing engineering instructions along with a photograph of the part actually installed. It proves a definite short-cut in production. By its use, engineering information is conveyed to shop employees with a minimum of time and effort. Much drafting and blueprint work is eliminated and the employee works on the plane with an actual scale photograph of the operation in front of him, rather than a series of complicated, hard-to-read blueprints. In other words, he works from a photographic reproduction of the installation with annotated instructions on the same sheet. It shows exactly how the part looks installed and leaves little chance for mistakes.

When a new-type of modification is called for at the Center, engineers, after a thorough study of the particular problem, make (often by hand) and install the new working part on the mock-up plane. The photographer from Repreduction is then called and grabbing his camera he crawls up on the plane and takes a photo of the installed part, providing, of course, the part is accessible to the cameraman. Back in the darkroom, he develops the negative and makes a master print on special vellum paper which is sent to the engineers who put all necessary shop instruction on the master sheet.

The print is then returned to Reproduction where the required number of copies are run off as positive on either the black and white or in negative form on the blueprint machine. Either machine may be used, dependent upon which is available at the particular moment. Copies are then distributed to Engineering, Production and to Central Blueprint files. The necessary number are then distributed to employees who are doing the actual job of installation. The original of the photo-drawing is filed for later use or reference in the Reproduction Tracing Room.

Photo-drawings have three distinct advantages in production, namely: they eliminate the necessity of having a large number of highly skilled draftsmen, whose efforts may be used to advantage on other projects; they are simpler to understand and easier to read; and by their use information is conveyed quicker, and chance for error lessened as employees can actually see how the part must be installed. There is no trial and error method in the installation; the photo shows the employee the one and only way the job can be properly done.

Set-up for speed and efficiency with all reproduction processes operating as one unit, it is possible for Modification Reproduction to get their work out in a hurry. Housed within the one department are complete facilities for reproduction through photographs, signs and posters, photostats, mimeographs, black and white, blue-

A Modification engineer, working with drawing instruments, puts complete shop instructions on the master print giving specific directions as to installation. It is then sent back to Reproduction department for extra copies.

Three employees print enlargements on special sensitized vellum paper. Printed in combination with a regular engineering drawing form, this serves as the master print from which copies are made.

When Photo Drawings are to be reproduced in blueprint form copies are made on the photostat machine shown in use below.

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ls at Martin-Nebraska

prints, silk screens and placards. With control over all reproduction facilities, there is no need for routing work from one department to another. An order never leaves Reproduction until fully completed. By nature of its work, the Modification Center must be geared to speed and adaptability with each hours, day or week bringing new problems that hust be solved immediately. When facilities do not exist, improvision becomes the rule of the day—and few have improved with better results than Reproduction.

The department is one of the newest at Martin-Nebraska and has been built to meet the specific needs of the Center. Last August 27, three women employees and one black and white machine constituted the physical equipment in the department. At present nearly a score of employees make up the Production group. Starting out with inexperienced help, all members of the department have been trained in their specific work with the result that all know their jobs and how they should be performed for maximum efficiency.

An idea of the amount of work turned out by this small department daily can be gathered from the following "typical" eight-hour day.

The mimeographing machine turned out 16,500 copies of different items while the black and white machine produced four thousand. The blueprint machine used one thousand yards of blueprint paper that was sorted and cut up in various sizes for production work. Though photography is but a minor sub-department, it is not unusual for 40 different photographs to be taken during one working day and a much larger number of positive prints made of the original negative.

The sign and poster department operates in conjunction with other Modification groups turning out promotion messages of all types and kinds. When decal work is to be done the silk screen work is executed in Reproduction.

With the exception of the strictly technical equipment such as cameras and reproduction machines, all equipment has been built to order for the specific needs within the Center.

Ample space is now available for the department's activities with nine separate rooms housing the offices and reproduction equipment. These include a sign and poster room, a dark room for development of photographic negatives; the photostat room; a large production room, containing the black and white machine, the blueprint machine and the mimeographing equipment, and a tracing and filing room.

The present department has been developed and is under the direct supervision of E. L. "Ernie" Johnson and W. C. Jones, Modification Engineering manager.

So when some new type of Modification arrives at the Center, all employees stand by waiting for the call that seems always to be of an urgent nature. And through their efforts, along with all other modification employees, the completed job rolls out the bay doors on schedule.

When decal or placard work is needed in the Reproduction process, the department uses the facilities provided by Henry Schneiders who executes the first steps of the process.

A copy of the photographed installation with complete engineering instructions, is here shown in use on the floor of the Modification Center. An error is difficult to make when the employee works with a photograph of the installed part before him.

The master photo drawing print is sent to the tracing room where it is filed for future reference. Copies are sent to Engineering, Production and Central Blueprint Files for distribution to employees actually doing the installation work.

In the largest room of the department, a group of employees sort, cut and prepare for distribution Photo Drawing prints along with numerous other reproductions from the blueprint and black and white machines. A mimeograph is also kept busy most of the time.

A view of three classes, ordinarily divided and made into separate class rooms by drawing the canvas curtains to inclose each class. In the first class room Frank Miller is lecturing on blueprint reading. In the second Art Klauck demonstrates the mechanism of a machine gun; in the third R. C. Amidon is lecturing on job instruction.

Here are three more class rooms. In the first Betty Haas and A. K. Becker conduct a class in Production Training. Next, Harold Rogers instructs a class in inspection work. Howard R. Norton conducts a class in Inspection training.

When scholars taxed the capacity of the regular class rooms in the Education department, Plant and Equipment met the emergency by taking used material and building a cute little one room school house in the Main Plant Annex. Here, the "teechur" Arthur L. Bailey, stops recitations long enough for the photographer to get a picture.

Every Day is School Day at Martin-Nebraska Company

It's always school day at Martin-Nebraska, with hundreds of scholars wending their way to the classroom each day, studying almost every conceivable subject that has anything to do with assembling bombers, plant supervision or management. On each shift, 24 hours a day school goes on. As soon as one class has finished reciting, heard a lecture or watched a practical demonstration, another takes its place.

The length of the average course is two weeks and once a Martineer has finished his course, he has become better acquainted with the job he is doing or has prepared himself for advancement. He is also at liberty to select and pursue another course if he so desires. Competent instructors, of the theoretical or the practical, conduct the classes that are turning out "know-how" craftsmen at Martin-Nebraska. Every bit of instruction is free and the classes at the plant are conducted on company time.

The Glenn L. Martin-Nebraska Company has provided industrial training for thousands of employees and is continually expanding its courses to meet the needs of new employees coming in, as well as to advance the knowledge of old employees who have in the past year become training conscious.

The Company has done an amazing job in its training courses. The Middle West has never been factory conscious. Nebraska, particularly, has always been an agricultural state with agriculture being the basic industry. Consequently, when Martin-Nebraska was established the entire fabricating personnel was built around 250 men who came from the parent company at Baltimore. Since its establishment, thousands of competent craftsmen, both men and women, have learned the art of manufacturing in the Martin-Nebraska training courses and have become skilled and excellent craftsmen. All training classes are supervised by the Education Department under the direction of Industrial Engineering.

Air Corps Auditor has Five Children in Service

With the nation at war service stars are rather commonplace in America today. But when one individual, such as John J. Brogan, cost auditor in the Army Air Corps at Martin-Nebraska is able to wear five of them on his lapel, it is news in any language.

Brogan, who has been at the Plant since March 9, 1942, has four sons and a daughter in the service of the United States. His lapel pin represents a lieutenant, a sergeant, a corporal and two privates, first class. Three of his children are on duty outside the country.

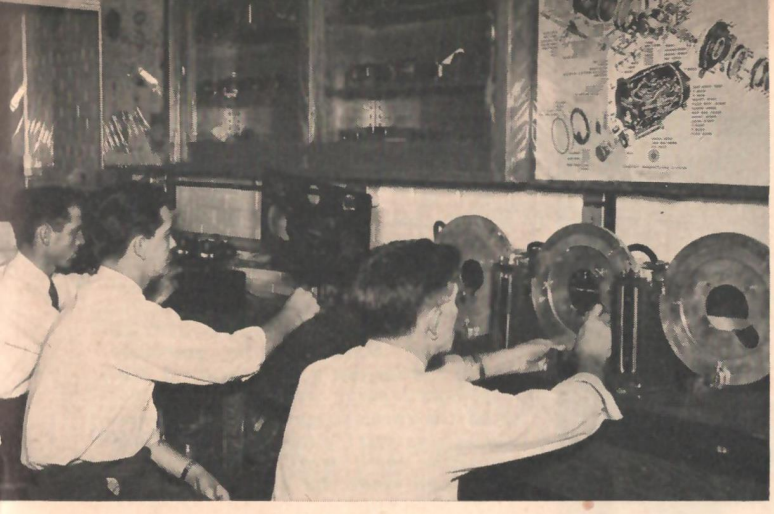
The stars represent: Lt. Kathryn E., Army Nurses Corps, a two-year veteran of the South Pacific; Pfc. George, Army Air Corps, New Guinea, recently wounded in action; Sgt. John Jr., Ordnance, Camp Santa Anita, Calif.; Cpl. Frank, Infantry, secretary to a chaplain in the Aleutians, and Pfc. Tom, Medical Laboratory Technician, Billings General Hospital, Fort Benjamin Harrison, Indiana.

Though the Brogans keep in pretty close touch with each other by mail, it has been some time since they were all together. Lt. Kathryn Brogan enjoyed a visit with Pfc. George in Australia last July 29, and since they are both now in New Guinea, they hope to see each other again soon.

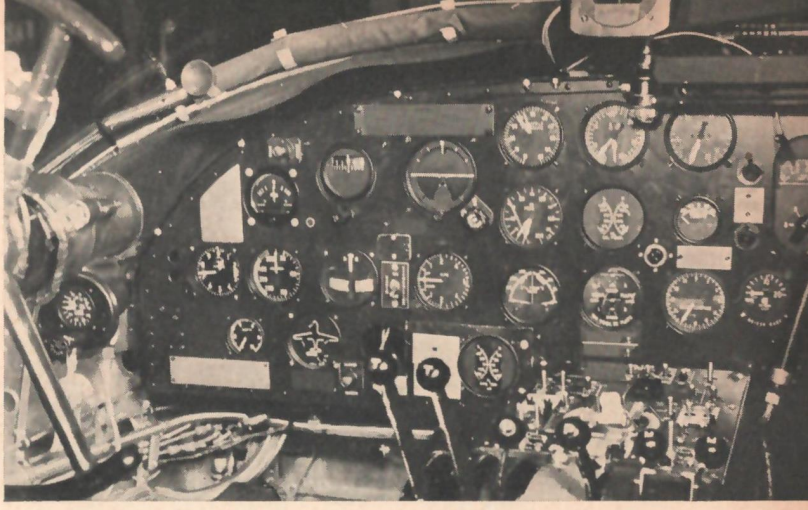
Pfc. George was wounded November 20 while in charge of a switchboard in the field. Though one arm was badly injured he is now well on the road to recovery.

STORK DEPARTMENT

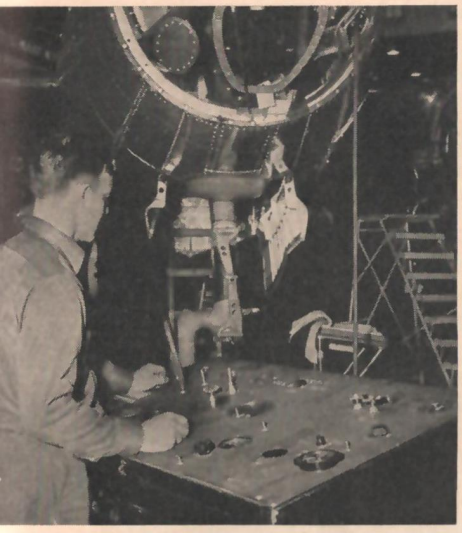
★ To Mr. and Mrs. Ira Larson (Maintenance) a girl, Jan. 31. ★ To Mr. and Mrs. Wilbur Brown (Finishing and Plating) a girl. ★ To Mr. and Mrs. Wayne Tenney (Assembly) a girl, Feb. 4. ★ To Mr. and Mrs. J. E. Bredin (Modification) a girl, Jan. 26. ★ To Mr. and Mrs. Walter M. Nelson (Assembly) a boy, Jan. 26. ★ To Mr. and Mrs. Claude A. Miller (Assembly) a boy, Jan. 19. ★ To Mr. and Mrs. Roland E. Pritchard (Ground Test) a son, Dec. 11. ★ To Mr. and Mrs. Charles Saling (Laboratory) a boy, Jan. 16. ★ To Mr. and Mrs. Carl Lazzaro, (Engine Prep) a girl, Jan. 12. ★ To Mr. and Mrs. Delbert Nordell (Welding) a girl, Jan. 20. ★ To Mr. and Mrs. John Guise (Welding) a boy, Dec. 28. ★ To Mr. and Mrs. Edward Svoboda (Small Parts) a girl, Dec. 31. ★ To Mr. and Mrs. C. W. Henkels (Traffic Mgr.) a girl, Jan. 20. ★ To Mr. and Mrs. Oren Harms (Machine Shop) a boy, Jan. 22. ★ To Mr. and Mrs. E. E. Viterna, (Modification Assembly) a boy, Jan. 22.



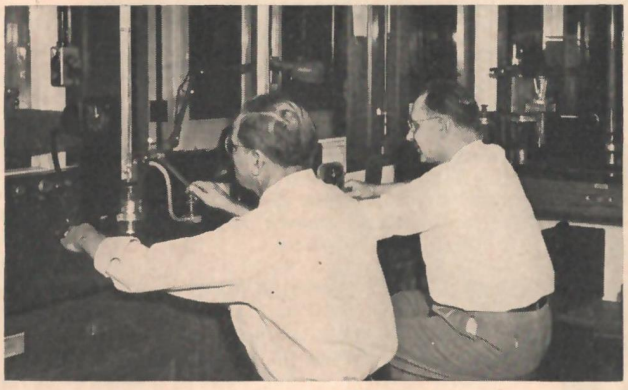
Instruments which simulate the motions of a plane in flight. Here, Vincent Kelley and Bill Swatosh "spot check" Gyro-Horizon instruments by using the oscillating table.



View of Pilot's Instrument Panel which tells him how his ship is behaving in the air. To the uninitiated it is nothing but a maze of dials. To the pilot, each dial carries a message.



Wm. Evans, making functional tests of instruments converging on the Pilot's Panel.



Harry Wissing and Billy Czapiewski, demonstrates the Altimeter and Manifold Pressure in the instrument room of Physical Laboratories.

Margaret Everett testing the Pilot head with the Manometer. This instrument shows how hard the plane is "hitting the air."

★ ★ ★

Instruments are 'Test Flown' On the Ground at GLM-NCo.

IN the Laboratories and on Final Assembly floor at Martin-Nebraska, are test pilots who never fly a plane, yet they put the instruments that guide the pilots in the air through severe tests that simulate practically any condition they will encounter in actual flight. Consequently, when the test pilot steps into a bomber to take it into the air on its maiden flight, he knows that the instruments have been so thoroughly checked and double checked that he can place his entire confidence in them.

These sturdy yet highly sensitive instruments are divided into two groups, flight and engine instruments. They are installed at various key positions in the plane, such as on the pilot's panel and in the navigator's and bombardier's compartments. For the most part, they are furnished by the government and must meet many government specifications and tests before they are finally installed.

When they are first received in the instrument room in the Physical Laboratories, skilled men who have had training in repairing and assembling delicate mechanisms, such as watches, radios or have had training in instrument schools, give them what is termed a "spot" check. This first check is merely to determine whether each instrument is mechanically accurate. Each is given tests wherein conditions under which they will operate in the air are simulated. For instance, the Gyro-Horizon, is placed on an oscillating table which simulates the motions of an air ship in flight. The instrument takes the place of the natural horizon and shows the position of the ship relative to the natural horizon. It tells whether or not the ship is flying level and indicates if the ship is climbing or diving and the degree of bank. It is most important that the Gyro-Horizon function accurately since it is used in "blind" flying. On the oscillating table the instrument is given the "roll, pitch and yaw test" and when it is completed any imperfection in the mechanism of the instrument will have been discovered.

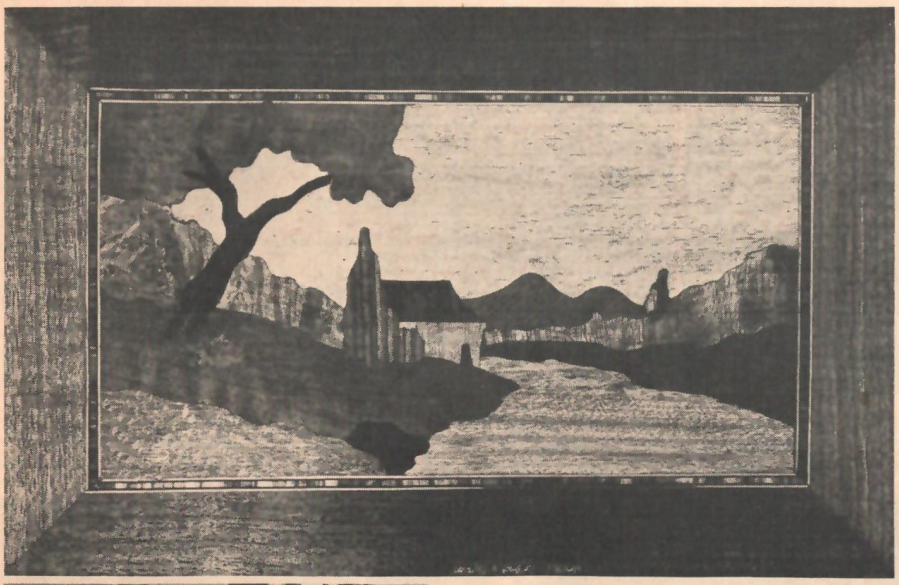
Mate To Compass

Then there is the Directional-Gyro which supplements the work of the ship's compass. In rough weather the compass tends to swing because of various conditions under which the ship may be flying. The Directional-Gyro is not affected by these conditions and when once "set" in relation to the magnetic compass it gives the precise direction in which the ship is flying.

The Turn and Bank Indicator is actually two instruments in one. It contains an Inclinometer, a curved glass tube holding a ball and damping liquid, which indicates banking of the ship. A pointer which is attached to a gyro indicates the rate of turn in degrees per minute. The pilot by using the two together is able to determine not only the rate in degrees per minute but also whether the controls (ailerons and rudder) are properly coordinated. Yes, a ship in full flight can skid on a turn just the same as an automobile on the ground if allowances are not made for speed and banking and this instrument furnishes the pilot with the necessary information.

Two tubes known as "Pitot tubes" are, in the case of the B-26, located on the leading edge of the wing near the tip and connect with the Airspeed Indicator on the various panels. The differential pressure (the difference between Pilot or dynamic pressure and static or atmospheric pressure) is measured by the indicator and converted into miles per hour air speed.

From the reading on the dial and some fast mental mathematics the pilot may calculate at what true air speed he is traveling. *(Continued on page 14)*



R. C. "Bob" Irish, left, is chief of the Martin - Nebraska telephone system. His leisure hours are spent in pursuing his hobby of artistic and decorative wood combinations. A sample of some of his work is shown in the picture above.

Martineer's Hobby Is "Wood Pictures"

During working hours, R. C. "Bob" Irish, as foreman of Telephone Engineering keeps the communication system of Martin-Nebraska in apple pie order so that the thousands of calls made over the telephones can go through without delay. In his leisure hours he may be found in the basement of his home where he has a completely equipped wood ship, working at his hobby, making some artistic object in which many different kinds of wood are involved and which requires not only an artistic creative touch but infinite patience.

The scene shown above measuring nine by 14 inches, is composed of 16 separate pieces of wood measuring 1/28th of an inch in thickness, each a different specie of wood. Some of the pieces come from India, and others from Africa, French Guiana, Brazil and North America. The frame is native walnut. The pieces were selected for their color, grain and texture and fitted so perfectly that no junction is visible. Needless to say it is a beautiful piece of work, carried through many intricacies, and required 30 working hours to complete. For tools he used a jig saw, razor blade, sand paper and, Bob says, a "considerable number of naughty words" to add emphasis to his work. Just now he is working on a smoking stand in which different woods will be utilized.

Working in wood has been Bob's hobby for many years, as he first became interested in wood carving tools as a small boy. The first piece of completed work was a wooden tool box. The study of woods, their coloring and texture, and their combinations in artistic creations has claimed his first interest. Bob has been a "telephone man" for 35 years having started as a member of a line crew and worked through all the grades of the telephone business to business manager. Bob says perfect relaxation from the regular job cannot be had without an interesting hobby, it matters not what it is as long as it interests and relaxes the mind.

Instruments

(*Continued from page* 13)

The Altimeter shows the height of the ship above sea level or above a pre-determined level but does not show the exact height above the terrain over which the ship is flying. The Rate of Climb instrument shows the rate in feet per minute that the ship is making in a climb or dive.

However, all instruments do not have to do with flight. There are many important mechanical features to which the pilot must give his attention if he is to have the maximum efficiency from his ship. To aid him there are instruments showing the performance of both engines. They indicate the pressure of the fuel, manifold and oil systems. The Cylinder Head Temperature Indicator indicates the temperature of the cylinder head and warns the pilot if the engines are overheating or threatening to overheat.

The Tachometer shows the pilot the revolutions per minute of the engines. If the pointer shows that the R.P.M.'s are dropping, it would be an indication that the engines were not operating properly.

The pilot's panel board is a maze of dials, most bewildering to the uninitiated, but "old stuff" to a trained pilot who takes in everything on them with an occasional glance and knows instantly what is going on.

When the tests for accuracy of each instrument have been completed in the Laboratories they are sent to the crew on Final Assembly where they are installed. Here, however, the tests deal only with functional operation of the instruments in relation to the entire instrument system. In other words, the tests prove whether or not they will "work" as a component part of a complete system. Some instruments operate electrically, others by pressure. They are installed and the tests are made with the test truck unit, a device that can simulate most conditions under which the instruments and the system will operate.

Undergo Rigid Tests

When the instruments have been tested thoroughly with the test truck and the Manometer, they will have encountered most conditions under which they will operate without having moved an inch off the floor or without a propeller having been turned. When the assembled ship leaves the big bay doors at Final Assembly, it can be assumed that the instruments embodied in the plane have undergone every test possible as to accuracy and functional efficiency, and have met the government specifications. During the many rigid tests to which the instruments have been subjected in the Laboratories and on the Final Assembly floor, any instrument failing in any manner to meet the requirements is discarded and one that will function properly is substituted.

Further tests of the instruments are made at Ground Test and Flight Test. It is a matter of check and double check, not once, but again and again.

"All American Team" Turns Out Marauders

Martin-Nebraska is truly an All-American enterprise, employees coming from 45 states of the Union and from each of the national possessions but the Philippines, to assemble the famous B-26 bomber. Naturally the mid-west has the largest representation, Nebraska leading with 61.84 per cent of the total number of employees. Iowa is next with 12.90 and California third with 4.08 per cent. Hawaii leads the possessions with .05 per cent.

These divergent personalities, converging at Martin-Nebraska in the great Cornhusker state, have been fused into a winning team that has been able, by reason of good coaching from supervision, to keep up production schedules month after month.

"Just Like Home"

Martinettes Find Their Jobs Similar to Household Tasks

Baking

SOME women try to escape from their never-ending jobs in the home, but others are happy doing these familiar chores—just a little bit differently—at Martin's.

Mrs. G. Duffy, right, bakes a delicious loaf of bread in her kitchen, and at work she "bakes" a piece of metal in a heat treating oven.

First row, left, "Cutting out a dress from a pattern is similar to scribing a template on metal," says Mary Raubenstine, Tool Room. Roberta Foreman, center, makes a window shine on a PBM, and there's mighty little difference between a PBM and a home window washing job. To the right, Mrs. Elsie Driver cuts out "cookies" on a drill press in "A" building. They may not taste as sweet as the home baked variety, but they definitely serve a purpose.

In the second row, left, rows upon rows of rivet bags remind Catherine Hartman, Metal Bench and Welding, of shelves of a grocery store. Her selection of the right rivets from stock is very much like shopping. Arlene Belcher, center, keeps the shelves in the Raw Stores Department just as neat as her mother's pantry. And at the right, Mrs. J. H. Putt irons out the wrinkles in blueprints as expertly as she presses her dresses and linens.

The idea that "women's place is in the home" has definitely taken a back seat at least for the duration. Women have brought their home skills to industry with exceptional results that spell doom to the Axis.

Dressmaking

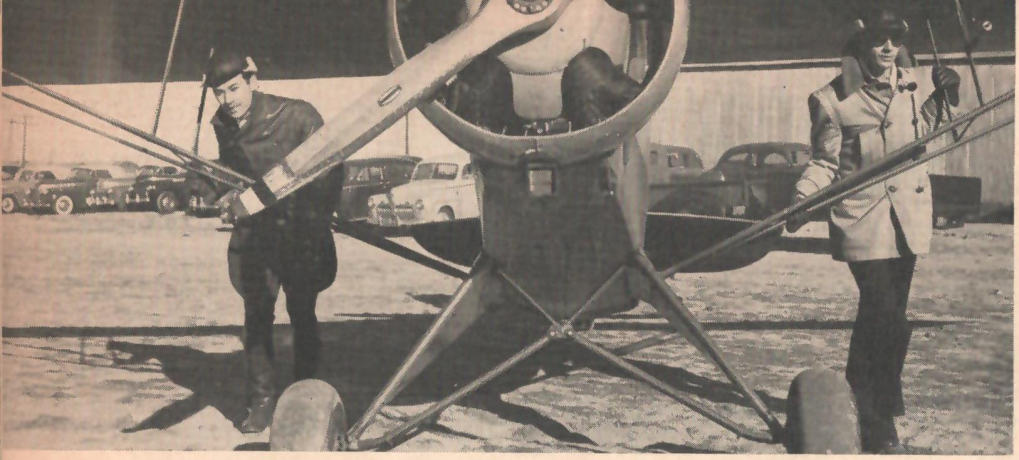
Washing Windows

Cutting Cookies

Shopping

Pantry Keeping

Ironing



Ben Wallace and Doug Philpot are two of Martin's most enthusiastic pilots. Prior to the war they spent their spare time flying regular "amateur" trips. Now they center their interest in C.A.P. activities. They are shown pushing their Rearwin on the runway for a training trip at the Westminster airport.

The Silver Fleet Is Back

(*Continued from page* 8)

returned to the States or have been transferred to other jobs. Many of the original Marauders have been salvaged to keep the others in the air or have just worn out from lack of parts.

What was left was reorganized, after an extensive overhaul which lasted through the winter and spring months of 1943, as a squadron. They became a part of the new group which included Liberators and Mitchells, newer bombers with range better suited for the flights over jungle terrain in the Southwest Pacific.

This squadron soon had the Japs scurrying for cover and the fame of the Silver Fleet extended to the ears of Hirohito in Tokyo. The second chapter of the Marauder's activities in the Southwest Pacific was told by Jimmy Hartman, Martin serviceman who left New Guinea last December. A veteran of nine years with the company, Hartman has serviced those Marauders both in 1942, when they were the first organized group to stand up against the Jap invasion threat, and in 1943, when they aided in carrying out the New Guinea offensive.

On 52 Missions

Major Walter Greer commanded them. Capt. Barrie C. Burnside, of Detroit, was squadron leader and operations officer. One of the few remaining veterans of the original group which left from Langley Field, Va., Barrie had amassed a total of 52 missions, the best record of any B-26 flier in the theater. He has the D.F.C. and Oak Leaf Cluster, Air Medal with numerous clusters and has just been appointed group operations officer.

When the squadron returned to combat last summer, No. 1368, the eighth Marauder to be built, was among its members. It crashed on takeoff and was used for salvage. Still in combat was No. 1388, the twenty-eighth B-26 with a total of 712 hours. No. 1427 had rolled up the most flying time—878 hours of training and combat.

In such planes as these and others of slightly less ancient vintage, the Silver Fleet pounded Jap shipping, invasion barge installations, small New Guinea and New Britain harbors, tankers, gun installations and enemy troop concentrations. They carried a total bomb load of over 3,000 pounds per Marauder, varying from 100 to 500-pound missiles. On an average mission a formation of nine Marauders would go out—and they always came back despite flak holes.

A good supply of spare parts had been assembled from the States and Australia for this second foray into combat, according to Hartman. Nearly all the Marauders were ready for combat every mission.

Life at the base in southeastern New Guinea was not a bed of roses. Most of the food was dehydrated. Insects of all varieties and descriptions plagued the men constantly. Their daily diet included a quinine and an atabrin pill as well as a vitamin pill.

Japs came over nightly to bomb the runways. Every day the natives came out in crews to fill in the bomb craters. They were also used to help about the camp. They are a friendly but dirty and smelly lot, says Hartman.

Several mascots were picked up for the camp. There was a wallaby, a full-grown brand of midget kangaroo—no larger than a flier's boot. There was a donkey, named "Marauder," who had been captured from the Japs by an Infantry outfit and who then wandered over to the squadron. And there was "Cookie," a white cockatoo.

Thus the boys who picked up about 500 medals in 1942 are still being well represented in the Southwest Pacific by pilots, who were formerly co-pilots, and other replacement pilots, who are flying the same old Marauders with a remarkable combat safety record.

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Ex-Martineer Safe

Technical Sgt. Jarvis Allen, former employee in Body for a year and later a gunner on a heavy bomber, has turned up at his home in Pyramid, Ky. He was reported missing August 17 on the Regensburg raid, but escaped to England through the French underground. He suffered slight wounds for which he won the Purple Heart.

Martineer Lived In Hunter's Paradise In Belgian Congo

Ever catch a 121-pound catfish or a 47-pound perch? How about shooting a leopard, or hartebeeste, or the mean African Buffalo? Few of us ordinary people have. But William C. Worth, Tool Design, has done that and more, for he is no ordinary person.

From 1926 to 1941, Mr. Worth lived as an industrial missionary (Presbyterian) in a paradise for hunters and fishermen in the heart of the Belgian Congo. He fished in the Lulua river, a tributary of the Congo, and hunted in the dense forests 1,200 miles inland from the Atlantic Ocean and six degrees south of the Equator.

It was there in the land of the peaceful but primitive tribe of the Baluba that Mr. Worth joined a group which shot a roguish elephant for damaging crops. There too, they hunted some hippopotami and caught 17-pound tiger fish, goliaths and perch, the largest fresh-water fish in the world.

First Built Churches

Mr. Worth's primary job was building churches, schools and other buildings for missions among the Baluba. He learned the language, Tshiluba (one of the Bantu tongues), and endeavored to improve their farming technique. For the Baluba only had one agricultural implement, a crude hoe with a one-foot long handle. This they used to raise their basic crop, casava, a root plant from which one gets tapioca, but which the natives use as we do wheat.

These peace-loving natives, about 2,000,000 in all, were surrounded by cannibalistic tribes. However, the Belgian Government has eradicated most of their customs. At one time the cannibals would sweep down and carry off whole villages, eating the old and selling off the young as slaves.

Mr. Worth can also speak Chinese, for he was born and raised at Chingkiang, where his father was a medical missionary for four decades. In 1915 the younger Worth came to the United States to attend Davidson College. In the last war he was commissioned in the Air Corps as a pilot, but the Armistice came shortly after that. Further education was at Davidson and Cornell. Married and with three children, Mr. Worth has also worked as a shipfitter welder, but is now a tool draftsman.

★ ★ ★

Capt. Curt Miller, a B-26 pilot on the Naples raid, ran into some heavy flak. One engine was knocked out. For two and a half hours he nursed the bomber on its homeward trip. His fuel in the tank of the good engine gave out and the fuel transfer system from the other engine did not work due to flak damage. He brought the B-26 down safely behind Allied lines.

Looking aft through the forward bunkroom of the Mars, living quarters of the crew that was guiding the big ship to Hawaii as this picture was taken.

Shadow

(*Continued from page* 6)

cubic capacity of a 14-15-room house are 36 comfortable bunks, a galley that would be the pride and joy of an apartment dweller, a lavatory complete with shower bath and electric razor outlets. On the flight deck or bridge, in itself bigger than the whole interior of a standard pre-war airliner, are a comfortable lounge for off-duty officers and a writing desk for the skipper.

Many of these luxuries will, of course, be missing from the Mars' wartime sister ships. The space they occupy will be needed for priority cargo. The weight they add must be put into fittings that will make these big flying boats readily convertible into hospital ships or troop carriers. But with the return of peace they will re-appear, for they are already a proven practicality.

And there are many other comfort items that will never be removed from this aerial giant, for like increased operating efficiency, they are advantages that are inherent to giant flying boats. Such items include smooth riding qualities due to a 200-foot wingspread that rides over many air currents—and space to move around in—space that can only be obtained with a huge boatlike hull.

Today the men and women of The Glenn L. Martin Company have stopped talking about the airplane of the future. Instead they are building it. Its name, of course, is Mars.

H. G. Mosier Former Ohio Congressman

Ex-congressman H. G. "Hal" Mosier, now a legal counsel at Martin's, began his legal career as a member of the firm that represented Glenn L. Martin when the Cleveland plant was built back in 1918.

Since that aviation history-making era, Mosier has been active in Ohio state politics as Lieutenant Governor in 1935 and 1936, and has served on the State Democratic Executive Committee, State Board of Bar Examiners, and in the Ohio state senate.

Mosier was elected as member-at-large from Ohio to the 75th Congress, House of Representatives, and served from 1937 to 1939. While a member of the House, Mosier was on the Rivers and Harbors Committee.

When asked if he planned to enter politics again Mosier said, with a politico's twinkle in his eye, "It all depends."

★ ★ ★

It had been a hot, 90-minute running fight with enemy aircraft—and no Allied fighter escort—on the trip home from an Italian target. One B-26, piloted by Capt. (now Major) Gordon Friday, of the State of Washington, had a severely damaged engine, which was sputtering.

Fearing the consequences of a forced landing on the sea, the pilot ordered his bombardier (Lt. Snow) out of the nose. Snow's reply was:

"No, sir. Give me another shot at those ——— ———, I'm mad."

Chief Cook and Photographer

It's an art—this business of cooking. Artist Charles Cignatta, photographer, has made cooking one of his main hobbies since he was a Boy Scout. On Scout outings he made his first appetizing impressions, until now when invited to dinner his hosts say, "Come to dinner, you cook the dinner."

Charlie taught his bride of two years how to cook, and his highest compliment to her accomplishments along that line is, "your cooking is so good it tastes just like mine." He has a shelf in the Cignatta pantry filled with delicacies such as artichokes, chick beans, four kinds of olives, special conserves and jams, but no matter how low Mrs. Cignatta finds herself in ration points, it is an unwritten law that she must not touch the goodies on that shelf.

Rhode Island style clam chowder and sea food of all kinds are specialties of Charlie's, but the dish he is most famous for is Italian spaghetti and meat balls. His parents never served him the dish, but he learned the recipe from a Monsignor who was on the advisory committee of Charlie's Boy Scout troop. Here's Charlie's idea of good spaghetti and meat balls:

Serving for 4. **Meat Balls,** cut up ¼ lb. salt pork and fry until pan is well greased. add one medium sized onion chopped. Mix 1 lb. top round steak ground, 1 egg, ⅓ cup fine bread or cracker crumbs and season with basil leaf, celery and garlic salt, salt and pepper, shape into balls and fry in grease until well browned. **Sauce,** alternate tablespoon of tomato paste (1 small can) with tablespoon of hot water, stirring constantly, add tomatoes (1 large can) and fried onions. Add meat balls and more seasoning (basil leaf, celery and garlic salt, salt and pepper) and simmer for at least an hour. Ten minutes before serving time put 1 lb. spaghetti in vigorously boiling salted water. At end of 10 minutes drain and serve with sauce, meat balls and Parmesian cheese.

Charlie Cignatta

Twenty For The Navy

(Continued from page 9)

even greater numbers of field guns or aircraft engines.

Four cargo hatches are provided for loading the JRM-1 as against three in the prototype. There are two main hatches, one under each wing, 99 inches wide and 92 inches tall. Each of these hatches is closed by vertically divided doors opening outward. On the prototype the main cargo hatches measured only 56 x 90 inches and had horizontally divided doors, the top half of which rode out with the bomb hoist. The doors on the production version are completely independent of the hoist, and the hoist itself is a self-contained unit which can be run to either side as the occasion demands without any re-rigging such as was necessary with the fixed unit on the Mars.

The two aft cargo hatches are located on either side of the airplane just forward of the second step. They provide openings 50 inches wide by 62 inches high and have doors which slide up inside the hull when open. Immediately above the aft hatches are trap doors 50 inches wide by 24 inches deep for loading low density cargo onto the upper deck.

Compared to the highly compartmented Mars with its many bulkheads and 20-inch bulkhead doors, provisions which were of utmost importance to its originally intended use as a patrol bomber the interior of the JRM-1 resembles a vast and spacious warehouse. The anchors and anchor windlasses have been moved up into the enlarged bow compartment. The compartment they formerly occupied is now the baggage compartment. The next compartment aft, formerly the forward bunkroom, serves as a combined galley and entrance to the flight deck. From this point back to the original position of the second step is nothing but cargo space broken only by frames with 66-inch wide openings where the bulkheads were on the prototype.

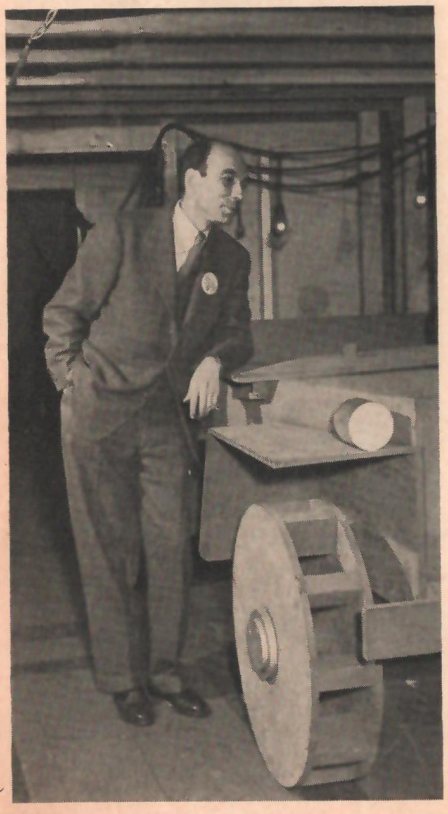
The main cargo deck has a plywood floor with a built-in grid of 3,000 pounds' capacity tie-down fittings running both fore and aft and athwart ships on 30-inch centers. The floor is also fitted with metal skid strips for sliding heavy cargo and aluminum alloy tracks both fore and aft and athwart ships for handling engine transportation dollies. Additional light is let into the interior of the hull by the addition of five extra portholes on each side.

Immediately aft of the cargo hold, in the space provided by moving the second step aft, is a stairway to the upper deck replacing the ladder arrangement on the prototype, an arrangement which would have prohibited the use of this deck for litter cases. As on the lower deck, the bulkheads on the upper deck have been replaced by frames—in this case the opening is 82 inches wide. All bunks have been removed from the upper deck except for four in the section immediately aft of the auxiliary power plant compartment, releasing this space for the stowage of low density cargo. The entire upper deck is floored, as in the prototype, with Panelyte flooring, an extremely light weight plastic flooring developed by Martin engineers.

More Cargo Capacity

The new production version of the Mars has been designed to fly at weights up to 145,000 pounds as compared to a design weight of 140,000 pounds for the prototype. The first airplanes of the new contract, expected to be ready early next year, will be powered with four 2,200 horsepower Wright Cyclone engines, but the design provides for a switch to larger and more powerful engines should the latter become available, which will permit a considerable increase in gross weight—hence an increased payload.

Alfred Sinks, a passenger on the Mars' historic first flight from Alameda to Pearl Harbor, stops off at Baltimore to inspect the JRM-1 mock-up. He was amazed by the many changes in the production version of the big ship.



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THIS MONTH'S COVER

As Martin turrets moved along the Sinclair Division assembly line on their way to be installed on planes for combat duty at aerial war fronts all over the world, Charles Cignatta, Photo Laboratory Dept., caught the excellent Kodachrome shot on the cover of this issue. Charley is fast becoming as well-known for his color pictures as he is for his spaghetti and other "palate delights" (see story in this issue).

Easy conversion to a hospital ship is one of the many new features of the JRM-1, production version of the Mars. Here Martineers from the project demonstrate how a stretcher can be passed to the upper rear deck through a specially designed trap.

First Sang Hit

It has been a long, long time since Mrs. Alma Pry, Experimental department, has sung the "Long, Long Trail." During her experience in vaudeville in 1917 Mrs. Pry had the honor of introducing this memorable song to the public, "but I never dreamed that it would reach the heights of popularity that it did," she says.

A graduate of the Washington College of Music, Mrs. Pry remained as a member of the College faculty for several years, teaching voice. "I was an amateur until I weathered my year on the vaudeville stage," says Mrs. Pry, "Every singer should have that experience."

Mrs. Pry was in the original WAVES—the Yeomanettes of World War I. She was a Yeomanette clerk at the Washington Navy Yard, dressed in the natty ankle-length uniform of that day. This war she is again a clerk, but at Martin's as a civilian.

—But They Returned

The worst damage in flak and bullet holes reported in the English Theater to a Marauder medium bomber is 311 for one mission. In Africa the record was 178. However, number of holes doesn't tell the whole story, for one 20 mm. cannon shell in a vital spot can do more damage than 300 flak holes scattered about the fuslage.

R.A.F. Marauders have made some remarkable return flights in their day. Operating in the Mediterranean one B-26 came home with a wing tip and half an aileron sheared off on the mast of an enemy freighter. It got back safely.

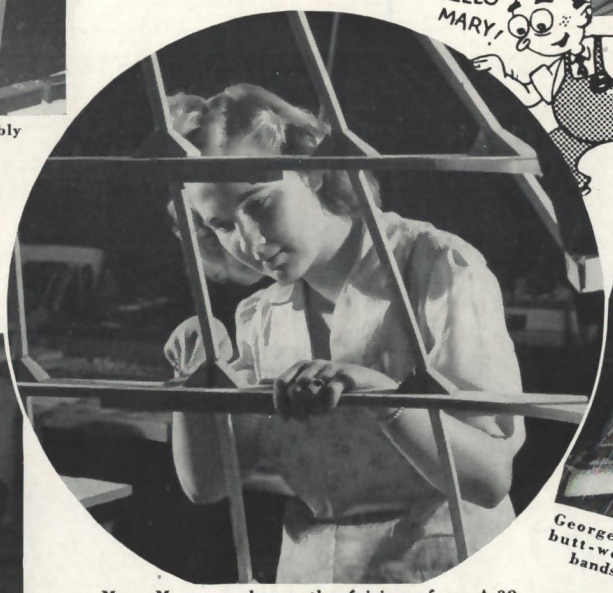
WOODWORKERS

Roy Spief, Joe Holechek and Sam Lagrossa build assembly fixtures for a Mariner bulkhead.

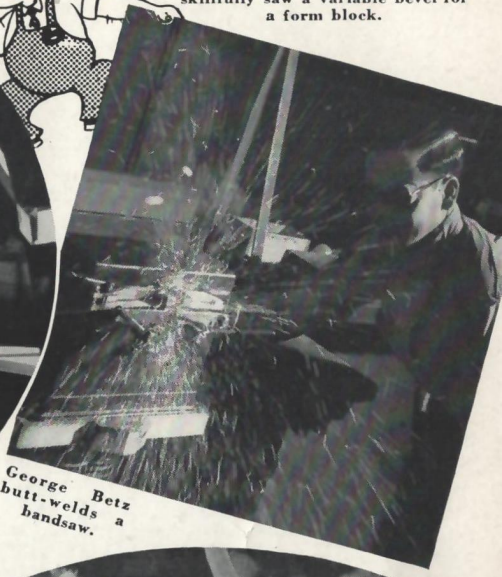
The all-metal airplane has supplanted the wood-and-fabric boxkite, but the woodcraftsman is as important as ever to the production of planes. Their many-side contribution to production, only partially shown on this page, ranges from making tools and mock-ups that are accurate within ten-thousandths of an inch to building and repairing furniture for office workers.

Edward Long and John Himmel skillfully saw a variable bevel for a form block.

June Cave helps John Kimmitt, Woodshop's star shaper, shape a piece of molding.

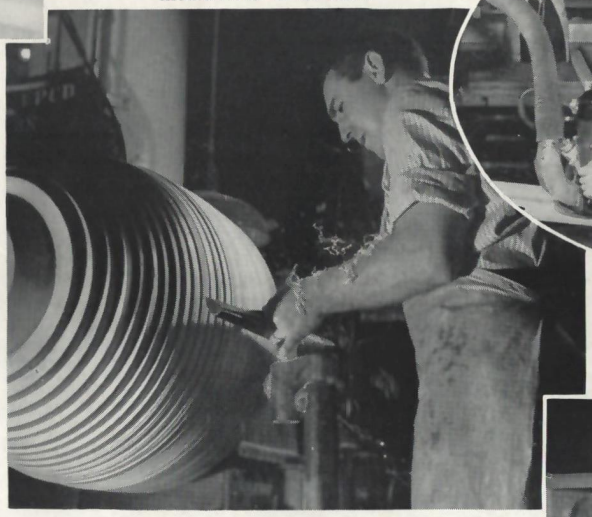


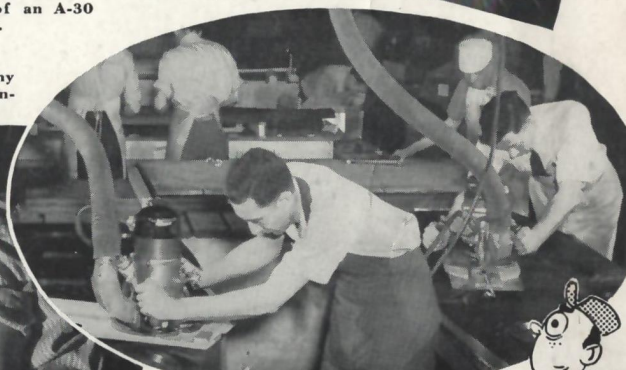
Mary Moore works on the fairing of an A-30 Baltimore bomb-bay door.



George Betz butt-welds a bandsaw.

Leroy Deaver expertly turns one of the many wooden mock-ups accurate to within ten-thousandths of an inch.

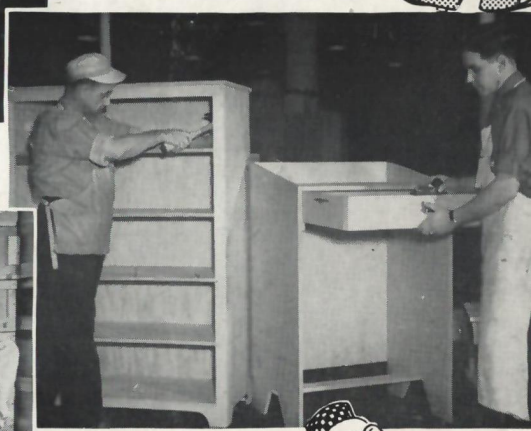




William Overholt and Paul Relter are routing beads on form blocks for hydraulic presses.

Herman Vobbe trouble-shoots an item of office furniture.

William Springer and Jacob Wellborn make boxes for safe transportation of thousands of small parts.



William Lay and John Gallagher making office furniture—in this case a filing cabinet and desk.

PBM's Over Rio